

**AMENDMENT NO. 2 SEPTEMBER 2018**  
**TO**  
**IS 8783 (PART 1) : 1995 WINDING WIRES FOR**  
**SUBMERSIBLE MOTORS — SPECIFICATION**

**PART 1 CONDUCTOR DATA**

*(First Revision)*

*(Page 3, Designation)* — Substitute 'IS 8783 (Part 1) : 1995' for 'IS 8785 (Part 1) : 1995'.

*(Page 3, Table 1)* — Substitute the following table for the existing:

**Table 1 Conductor Data — Round Solid Conductor**  
*(Clause 5.1.1)*

<b>Cross-Sectional Area (Nominal) mm<sup>2</sup></b>	<b>Diameter of Conductor (Nominal) mm</b>	<b>Elongation (<i>Min</i>) Percent</b>	<b>Conductor Resistance At 20°C(<i>Max</i>) Ohm/km</b>
(1)	(2)	(3)	(4)
0.126	0.40	24	141.32
0.159	0.45	25	111.66
0.196	0.50	25	90.44
0.238	0.55	26	74.75
0.283	0.60	26	62.81
0.332	0.65	28	53.52
0.385	0.70	28	46.14
0.442	0.75	28	40.20
0.502	0.80	28	35.33
0.568	0.85	29	31.29
0.636	0.90	29	27.91
0.709	0.95	30	25.05
0.785	1.0	30	22.61
0.950	1.1	30	18.69
1.130	1.2	31	15.70
1.330	1.3	32	13.38
1.540	1.4	32	11.54
1.770	1.5	32	10.05
2.010	1.6	32	8.83
2.270	1.7	32	7.82
2.540	1.8	32	6.98
2.840	1.9	32	6.26
3.140	2.0	33	5.65
3.460	2.1	33	5.13
3.800	2.2	33	4.67
4.150	2.3	33	4.27
4.520	2.4	33	3.93
4.910	2.5	33	3.62
5.310	2.6	34	3.34
5.730	2.7	34	3.10
6.160	2.8	34	2.88
6.610	2.9	34	2.69
7.070	3.0	34	2.51
7.550	3.1	35	2.35
8.040	3.2	35	2.21
8.550	3.3	35	2.08
9.080	3.4	35	1.96
9.620	3.5	35	1.85
10.180	3.6	36	1.74

**Amendment No. 2 to IS 8783 (PART 1) : 1995**

Cross-Sectional Area (Nominal) mm <sup>2</sup>	Diameter of Conductor (Nominal) mm	Elongation ( <i>Min</i> ) Percent	Conductor Resistance At 20°C( <i>Max</i> ) Ohm/km
(1)	(2)	(3)	(4)
10.750	3.7	36	1.65
11.340	3.8	36	1.57
11.950	3.9	36	1.49
12.570	4.0	37	1.41
13.200	4.1	37	1.35
13.850	4.2	38	1.28
15.210	4.4	38	1.17
16.620	4.6	38	1.07
18.100	4.8	39	0.98
19.640	5.0	40	0.90

NOTE — The finished copper wire sample shall exhibit 95 percent value of the elongation given in col 3 above.

(Page 6, Annex A) — Substitute the following annex for the existing:

**ANNEX A**  
(Clause 4.1.1.3)

**FORMULA FROM WHICH RESISTANCE IS CALCULATED**

**A-1** The resistance value specified have been calculated from the formula:

$$R = \frac{4\rho}{n\pi d^2} k_1 k_2$$

where

$R$  = resistance at 20°C, in ohms/km;

$\rho$  = standard resistivity of the metal at 20°C in absolute ohm, mm<sup>2</sup>/km, that is, 17.241 for annealed copper;

$n$  = number of wires in the conductor;

$d$  = nominal diameter of the wires in the conductor, in millimetres;

$\pi$  = 3.141 592 7 in accordance with SP 8 : 1970;

$k_1$  = factor depending on the diameter of the wire in the conductor, the value of this factor is given in Table 4;  
and

$k_2$  = factor depending on the way in which the conductor is formed the value of this factor is as given below:

Factor  $k_2$

a) For solid conductor	:	1.00
b) For stranded conductor where nominal strand diameter;		
i) Exceeds 0.6 mm	:	1.02
ii) Does not exceed 0.6 mm	:	1.04

**Table 4 Factor  $k_1$**   
(Clause A-1)

Sl No.	Maximum Diameter of Wires in Conductor		Solid Conductor	Stranded Conductor
	Over (2) mm	Up to and Including (3) mm		
(1)	(2)	(3)	(4)	(5)
i)	0.31	4.5	1.03	1.02
ii)	4.50	—	—	—

(ETD 33)

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